

REMARKS**Summary of the Office Action**

In the Office Action claims 1-3, 8-10 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,388,678 to Kasahara et al. (hereinafter "Kasahara") in view of U.S. Patent No. 5,808,628 to Hinson et al. (hereinafter "Hinson"), and further in view of U.S. Patent No. 5,245,444 to Hashimoto (hereinafter "Hashimoto").

Claims 4-7 and 11-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kasahara in view of Hinson, and further in view of Hashimoto, as in claim 1, and further in view of U.S. Patent No. 5,014,333 to Miller et al. (hereinafter "Miller").

Summary of the Response to the Office Action

Applicant had added new claim 16 to differently describe an embodiment of the disclosed invention. Accordingly, claims 1-16 are currently pending for consideration.

The Rejections under 35 U.S.C. § 103(a)

Claim 1-3, 8-10 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kasahara in view of Hinson, and further in view of Hashimoto. Claims 4-7 and 11-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kasahara in view of Hinson, and further in view of Hashimoto, as in claim 1, and further in view of Miller. These rejections are respectfully traversed for at least the following reasons.

The Office Action rejects independent claim 1 with a combination of Kasahara in view of Hinson, and further in view of Hashimoto. The display device combination recited in claim 1 includes a first input terminal for receiving an analog image signal; a second input terminal for

receiving a digital image signal; an analog-to-digital converter connected to said first input terminal; a first switch for selecting an output between a digital signal outputted from said analog-to-digital converter and a digital signal inputted to said second input terminal; and a gradation circuit for converting a digital signal outputted from said first switch into a signal indicative of a level of pseudo gradation by an error diffusion method or a dithering method, wherein said gradation circuit includes a second switch for selecting an output between the diffusion method or the dithering method.

On the contrary, Applicant respectfully submits that Kasahara discloses a display device which converts an analog signal to a digital signal, detects a peak level and an average level of intensity within one field, and continuously controls intensity of a screen on the basis of the detected level.

The Office Action refers to the image characteristics determining device 30 shown in Fig. 9 of Kasahara as allegedly corresponding to the “first switch for selecting an output between a digital signal outputted from said analog-to-digital converter and a digital signal inputted to said second input terminal” feature of independent claim 1. Applicant respectfully traverses this interpretation of Kasahara at least because the image characteristics determining device 30 of Kasahara merely receives an average level L_{av} and a peak level L_{pk} and generates four parameters A, K, Z and N for controlling the intensity of the screen. See, for example, col. 12, lines 47-52 of Kasahara.

Applicant respectfully submits that the image characteristics determining device 30 of Kasahara differs from the “first switch” recitations of claim 1 at least in that the image characteristics determining device 30 has no switching function to select an output between a signal from the vertical synchronizing frequency detector 36 and a signal of the average level

Lav or the peak level Lpk. Even though specific details regarding the signal output from the vertical synchronizing frequency detector 36 is not described in Kasahara, Applicant respectfully submits that a person having ordinary skill in the art could readily infer that such a signal is vertical frequency data of a video signal detected by the synchronizing frequency detector 36. Accordingly, since a sustain frequency of the PDP varies depending on the vertical frequency, the four parameters A, K, Z and N are controlled in the image characteristics determining device 30, not only by the signal of the average level Lav or the peak level Lpk but also by the vertical frequency information of a video signal.

Moreover, the additionally applied references to Hinson and Hashimoto fail to cure the deficiencies set forth above with regard to Kasahara. For example, Hashimoto discloses a facsimile device which usually selects an error diffusion process, whereas it selects a dithering process only in the case when a quantity of image data overflows and exceeds a specified value in order to improve the data accumulation efficiency of a memory component. Also, Hinson merely discloses a video memory device which switches between analog video data or digital video data for data storing. Neither of Hinson and Hashimoto teach or suggest the “first switch” as recited in independent claim 1, which is also neither shown nor suggested Fig. 9 of Kasahara, as discussed above. Therefore, a person having ordinary skill in the art would not arrive at the claimed combination of independent claim 1 using the references asserted by the Office Action.

Moreover, Applicant further traverses the Office Action’s combination rejection under 35 U.S.C. § 103(a) for the following reasons. The Examiner concedes at page 3 of the Office Action that “Kasahara does not teach a second input terminal for receiving a digital image signal.” However, the Examiner then applies Hinson as allegedly teaching “how a video data is inputted to the video store 11 via an input selector 12 which includes both an analog input and a

digital input to enable data to be input in either analog or digital format (column 5, lines 30-37, figure 2 at 11-15).” The Office Action thus goes on to allege that “it would have obvious ... to combine Kasahara and Hinson” for the reasons set forth at page 3, second paragraph, of the Office Action. The Office Action alleges that the “motivation for combining these inventions would have been to achieve a display device capable of being responsive to user operable different types of input means (column 4, lines 20-33).”

Applicants respectfully traverse this combination rejection at least because the applied Hinson reference relates to an electronic video processing system for combining and editing a plurality of video clips. Such a system is typically used in a television post production environment in which various video clips are edited together, or superimposed on each other, to enable dynamic graphics to be produced. Such a video editing environment is very different from the instant display device and display driver environment, and one skilled in the art of the instant application would not naturally look to the video editing technologies in order to modify the known display driver technologies to reach the claimed combinations of the instant application. Instead, such a modification would only be contemplated after reviewing the specific and detailed combination of elements currently recited in the independent claims of the instant application.

In the newly-applied rejections, the Office Action has pieced together three or four references to teach the claimed features. However, MPEP § 2143.01 instructs that “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990).” MPEP § 2143.01 further instructs that “[a]lthough a prior art device ‘may be capable of being modified to run the way the apparatus is

claimed, there must be a suggestion or motivation in the reference to do so.'" The references applied in the latest Office Action do not provide such a suggestion or motivation.

Instead, the only motivation to piece together the three or four references of the Office Action is found in the Applicant's own application and in the specific combinations recited in the claims. MPEP § 2141 instructs that "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention." MPEP 2143 instructs that "the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ 1438 (Fed. Cir. 1991)." The Federal Circuit has clearly held that "the motivation to combine references cannot come from the invention itself." Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 30 USPQ 2d 1377 (Fed. Cir. 1993). Thus, we could point out that the Office Action has not established a *prima facie* case of obviousness and the rejections under 35 U.S.C. § 103(a) should be withdrawn.

Applicants respectfully submit that dependent claims 2-3 and 8-10 are allowable at least because of their dependence on independent claim 1. With regard to the rejections of claims 4-7 and 11-14, Applicants respectfully submit that these claims are also allowable at least because of their dependence on independent claim 1, and also because the additionally applied reference to Miller fails to cure the deficiencies of Kasahara, Hinson and Hashimoto, as discussed above with regard to independent claim 1.

For example, Miller discloses a technique for improving video quality by using both the error diffusion method and the ordered dithering method. Specifically, Miller discloses a technique which smoothly attenuates an error diffusion process when the local area intensity approaches a minimum value or a maximum value, and smoothly attenuates an ordered dithering

process when a local area high special frequency content increases. See, for example, the Abstract of Miller. Accordingly, Applicant respectfully submits that the technique disclosed by Miller includes a feature which combines the error diffusion process and the ordered dither process so as to control each effect of the processes by means of a signal characteristic. This technique is therefore quite different from the feature of the present invention which selects either the error diffusion process or the dithering process by means of the signal characteristic.

Accordingly, for at least the foregoing reasons, withdrawal of the rejections under 35 U.S.C. § 103(a) of claims 1-14 are respectfully requested.

With regard to the rejection of independent claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Kasahara in view of Hinson and Hashimoto, Applicant respectfully submits that independent claim 15 specifically recites that “when said digital video signal converted from said analog input video signal is input, said pseudo intermediate gradation process in said error diffusion method is selected, whereas when said digital input video signal is input, said pseudo intermediate gradation process in said dithering method is selected.”

The Examiner conceded that the previously-applied art did not teach “a second input terminal for receiving a digital image signal.” Accordingly, it follows that the previously-applied art would also not teach these specific features of claim 15 which rely on whether or not a digital image signal from a second input terminal is input. Moreover, Hinson does not cure the deficiencies of the previously applied references with regard to these features of claim 15 involving an interrelationship between the analog and digital input signals with error diffusion and dithering, respectively.

Moreover, Applicant respectfully submits that when an original input video signal is an analog signal, selecting an output from the error diffusion method of the pseudo intermediate

gradation process provides a pattern having higher resolution. On the other hand, when an original input video signal is a digital signal, selecting an output from the dithering method of the pseudo intermediate gradation process provides a pattern having more stability. Accordingly, the novel combination recited in independent claim 15 of the instant application can always provide a high-quality image in both analog and digital input video signals in a way that is neither shown nor suggested by the applied art of record, whether taken separately or in combination.

Accordingly, Applicant respectfully asserts that the rejection of claims 1-15 under 35 U.S.C. § 103(a) should be withdrawn because the applied art of record, whether taken singly or combined, do not teach or suggest each feature of independent claims 1 and 15. MPEP § 2143.03 instructs that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)." Furthermore, Applicant respectfully asserts that dependent claims 2-14 are allowable at least because of their dependence from claim 1 and the reasons set forth above.

Newly-Added Claim 16

Applicants have added new claim 16 in order to differently describe an embodiment of the instant application. In particular, claim 16 recites a "video display device capable of receiving a digital video signal comprising a gradation circuit having a noise detector for detecting noise of lower bits of said digital video signal, wherein said gradation circuit executes both of pseudo intermediate gradation processes of an error diffusion method and a dithering method, and when said detector detects noise, an output from said error diffusion method of said pseudo intermediate gradation process is selected, whereas when said detector detects no noise, an output from said dithering method of said pseudo intermediate gradation process is selected."

Applicant respectfully submit with regard to newly-added claim 16 that when lower bits of an input video signal include noise, selecting an output from the error diffusion method of the pseudo intermediate gradation process provides a pattern having higher resolution. On the other hand, when lower bits of an input video signal include no noise, selecting an output from the dithering method of the pseudo intermediate gradation process provides a pattern having more stability. Accordingly, the device recited in newly added claim 16 of the instant application can always provide a high-quality image in both cases.

As described above, Kasahara, Hinson, Hashimoto and Miller do not teach or suggest, to any extent, an essential feature of newly-added claim 16 of the present application which selects an output from the error diffusion method of the pseudo intermediate gradation process when lower bits of an input video signal include a noise, and selects an output from the dithering method of the pseudo intermediate gradation process when lower bits of an input video signal include no noise. As a result, Applicant respectfully submit that a person skilled in the art would not arrive at the claimed subject matter even in light of Kasahara, Hinson, Hashimoto and Miller for at least the foregoing reasons.

Conclusion

In view of the foregoing, Applicant respectfully requests reconsideration and reexamination of this application, withdrawal of all rejections, and the timely allowance of all pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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